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TEES

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User's Guide to Program FLEXSTAB

A Final Report

to the

National Aeronautics and Space Administration
Manned Spacecraft Center

research performed under
Contract No. NAS 9-11303

by

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Investigator and Associate Professor
of Electrical Engineering

and

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February 23, 1975

Texas A&M University
Texas Engineering Experiment Station
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Table of Contents

Summary

This document represents a user's manual for correctly submitting FLEXSTAB program runs on the UNIVAC 1108 computer system. All major program modules, converted and correctly executed by Texas A&M project personnel, have been included. All CUR control cards have been documented for the user's convenience. The JOB card paramters have also been included in order to provide some idea as to "reasonable" time estimates for the program modules.

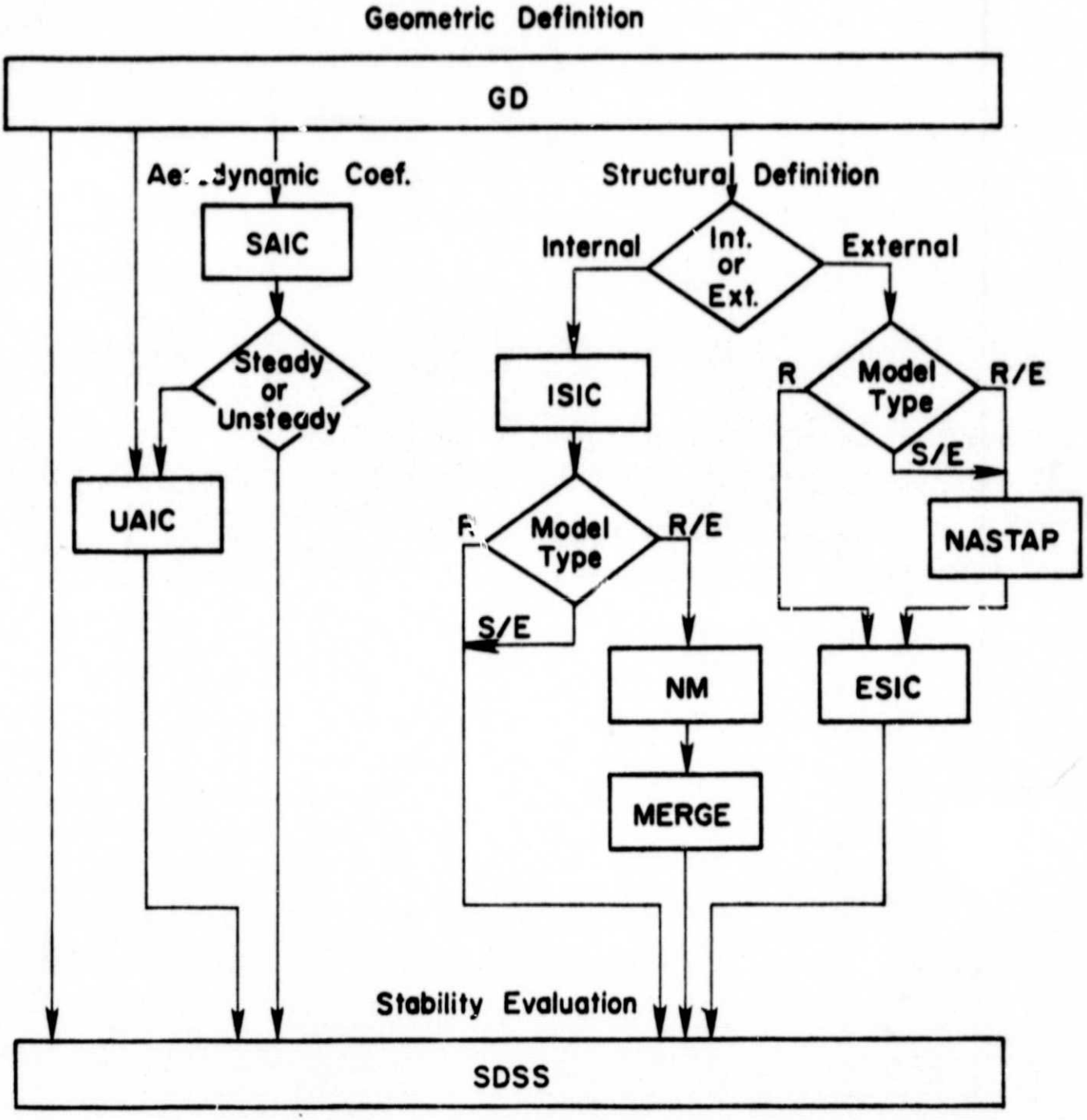


FIG. 1 FLEXTAB FUNCTIONAL FLOW

Geometry Definition (GD) Program

Input Required

GD Data Deck

Program Required

GD program in Tape PCF = Tape B

Program Correction Required

None

Output File Generated

Tape A = GD tape = A05090 Geometry description

File Destinies

Tape A: SAIC
UAIC
ISIC
ESIC
SDSS
TH
GDPLOT

Cover Sheet Format

Ref-GD/1

Control Cards

Ref-GD/2

INSTRUCTIONS FOR CENTRAL COMPUTER COMPLEX COMPUTER RUNS

Ref-GD/1

PROGRAMMER	BADGE NO.	BOX NO.	PHONE NO.	DATE	PRIORITY & INITIALS
D. Colunga	1048	C-16	5971		

DIVISION CODE	PROG. NO.	PROJ. NO.	EST. TIME	MAX. TIME	LINES OUTPUT	DECK NO.
FD 32	E169	3696E	1	2	6k	

OPERATING SYSTEM		TYPE OF RUN	LOG NO.
1108 FORTRAN V ☐	3200 SCOPE ☐	PROD. ☒ TEST ☐	COMPUTER REQUIREMENTS
1108 FORTRAN IV ☒	3200 SMARTS ☐	OTHER (EXPLAIN BELOW)	1108 ☒ 3200 ☐
1108 OTHER ☐	3200 OTHER ☐		OTHER

INPUT TAPES

RACK	UNIT	REEL NO.	FILE NAME
*	B		PCF

OUTPUT TAPES

UNIT	REEL NO.	FILE NAME		SAVE	PROCESSING REQUIRED
A	A05090	A		Yes	

WORKING TAPES

				4060 ☐		REEL NO.	NO. FRAMES
				16 MM ☐	35 MM ☐		

ABNORMAL STOPS	TOTAL TAPE DRIVES USED	ACTUAL TIME USAGE
STOP AT LOC. SR:	2	STOP
LOOPING LOC. THRU	DUMP INSTRUCTIONS	
EXCESS OUTPUT	NO DUMP X	
EXCESS TIME	DUMP ON STOP	START
	DUMP ON LOOP	
	OTHER	

PROGRAMMER'S COMMENTS

* Tape B is a special Texas A&M PCF tape.

OPERATOR'S COMMENTS

SYSTEM OPERATOR

Ref-GD/2

```
vP RUN 01048,FD32,C16,3696E,E169,C,2,6                    D. COLUNGA
vN MSG FILE REQ  TAPE 2  EH 432 1  FSTRN 1
v  ASG A=A
v  ASG B=PCF
v  ASG E
   XQT CUR
   TRW B
   IN  B
   REL B
v  XQT GD

       GD DATA DECK

v  FIN
```

Steady Aerodynamic Influence Coefficient (SAIC) Program

Input Required

(1) Tape A = GD tape = A05090 (File generated by GD run)

(2) SAIC data deck

Program Required

SAIC in PCF tape (=Tape E)

Program Corrections Required

None

Output Files Generated

(1) Tape B = SAIC TAPE B = A01827

File Destinies

(1) Tape B: UAIC
CAIC
SDSS

Cover Sheet Format

Ref-SAIC/1

Control Cards

Ref-SAIC/2

SAIC Data Deck

Ref-Boeing Document

INSTRUCTIONS FOR CENTRAL COMPUTER COMPLEX COMPUTER RUNS

Ref-SAIC/1

PROGRAMMER	BADGE NO.	BOX NO.	PHONE NO.	DATE	PRIORITY & INITIALS
D. Colunga	1048	C-16	5971	6/2	

DIVISION CODE	PROG. NO.	PROJ. NO.	EST. TIME	MAX. TIME	LINES OUTPUT	DECK NO.
FD-32	E169	3696E	50	240	2k	

OPERATING SYSTEM				TYPE OF RUN		LOG NO.	
1108 FORTRAN V	☐	3700 SCOPE	☐	PROD. ☒	TEST ☐	COMPUTER REQUIREMENTS	
1108 FORTRAN IV	☒	3200 SMARTS	☐	OTHER (EXPLAIN BELOW)		1108 ☒	3200 ☐
1108 OTHER	☐	3200 OTHER	☐			OTHER	

INPUT TAPES				OUTPUT TAPES					
RACK	UNIT	REEL NO.	FILE NAME	UNIT	REEL NO.	FILE NAME	C	SAVE	PROCESSING REQUIRED
	A	A05090	A						
	E		PCF						
				B	A01827	SAIC		X	

WORKING TAPES						
				4060 ☐	REEL NO.	NO. FRAMES
				16 MM ☐ 35 MM ☐		

ABNORMAL STOPS	TOTAL TAPE DRIVES USED	ACTUAL TIME USAGE
STOP AT LOC. SR:	3	STOP
LOOPING: LOC. THRU	DUMP INSTRUCTIONS	
EXCESS OUTPUT	NO DUMP X	
EXCESS TIME	DUMP ON STOP	START
	DUMP ON LOOP	
	OTHER	

PROGRAMMER'S COMMENTS

PCF = Special Texas A&M Input Tape.

OPERATOR'S COMMENTS

SYSTEM OPERATOR

```
VZ RUN 01048,FD32,C16,3696E,E169,C,240,2                    D. COLUNGA
VN MSG FILE REQ   TAPE 3  FH432  2  FSTRN 16
V  ASG A=A05090
V  ASG F=PCF
VW ASG B=SAIC
V  ASG C,D,K,L,M,N,O,P,Q,R,S,T,U,V,W,X
V  XQT CUR
   TRW E
   IN  E
   ERS
   IN  E
   REL E
V  MAP PROG
   SEG AIC-MPAK-*(CPTGEN,AICGEN,TRNOVR,CAMTHK-*(CAMBER,THICK))
MPAK SEG RHEAD-WHEAD-RVEC-WVEC-VLIN-VIP-LOCATE
V  XQT PROG

         SAIC DATA DECK   (cf REF-Boeing Document)


VFIN
```

Internal Structural Influence Coefficient (ISIC) Program

Input Required

(1) Tape A - GD Tape = A05090 (File Generated by GD Run)

(2) ISIC Data Deck

Program Required

ISIC in A06973 tape (= Tape Z)

Output Files Generated

(1)	Tape B = A07178	Matrix Catalog
(2)	Tape C = A03098	Symmetric Normal Modes Matrices
(3)	Tape D = A13214	Anti-symmetric Normal Modes Matrices
(4)	Tape E = A04911	Symmetric SDSS Matrices
(5)	Tape F = A01734	Anti-symmetric SDSS Matrices
(6)	Tape G = A07233	Elastic Axis Plot Tape

File Destinies

(1) Tape B: NM, SDSS

(2) Tape C: NM

(3) Tape D: NM

(4) Tape E: SDSS, MERGE

(5) Tape F: SDSS, MERGE

(6) Tape G: SLOAD, EAPLOT

Cover Sheet Format

Ref-ISIC/1

Control Cards

Ref-ISIC/2

ISIC Data Deck

Ref-Boeing Document

INSTRUCTIONS FOR CENTRAL COMPUTER COMPLEX COMPUTER RUNS

Ref-ISIC/1

PROGRAMMER			BADGE NO.	BOX NO.	PHONE NO.	DATE	PRIORITY & INITIALS
D. Colunga			1619	C-16	5971	6/23	
DIVISION CODE	PROG. NO.	PROJ. NO.	EST. TIME	MAX. TIME	LINES OUTPUT	DECK NO.	
EX 24	E169	3696E	120	180	12k		

OPERATING SYSTEM		TYPE OF RUN	LOG NO.
1108 FORTRAN V ☐	3200 SCOPE ☐	PROD. ☒ TEST ☐	COMPUTER REQUIREMENTS
1108 FORTRAN IV ☒	3200 SMARTS ☐	OTHER (EXPLAIN BELOW)	1108 ☒ 3200 ☐
1108 OTHER ☐	3200 OTHER ☐		OTHER

INPUT TAPES				OUTPUT TAPES					
RACK	UNIT	REEL NO.	FILE NAME	UNIT	REEL NO.	FILE NAME	C	SAVE	PROCESSING REQUIRED
	A	A05090	A	B	A07178	B		Yes	
	Z	A06973	Z	C	A03098	C		Yes	
				D	A13214	D		Yes	
				E	A04911	E		Yes	
				F	A01734	F		Yes	
WORKING TAPES				G	A07233	G		Yes	
				4060 ☐		REEL NO.			NO. FRAMES
				16 MM ☐	35 MM ☐				

ABNORMAL STOPS	TOTAL TAPE DRIVES USED	ACTUAL TIME USAGE
STOP AT LOC. SR:	8	STOP
LOOPING: LOC. THRU	DUMP INSTRUCTIONS	
EXCESS OUTPUT	NO DUMP X	START
EXCESS TIME	DUMP ON STOP	
	DUMP ON LOOP	
	OTHER	

PROGRAMMER'S COMMENTS

OPERATOR'S COMMENTS

SYSTEM OPERATOR

```
VZ RUN 01619,EX24,C16,3696E,E169,C,180,12                    D. COLUNGA
 N MSG FILE REQ  TAPE 8 FH432 2  FSTRN 16
  ASG A=A05090
 S ASG B=B
 S ASG C=C
VS ASG D=D
VS ASG E=E
VS ASG F=F
VS ASG G=G
V  ASG H,I,J,K,L,M,N,O,P,S,T,U,V,W,X,Y
V  ASG Z=A06973
V  XQT CUR
   TRW Z
   IN  Z
   REL Z
V  MAP PROG
   SEG ISIC-MPAK-*(GDPROG,OPTION,THRE,FMAT)
MPAK SEG VIP-VLIN-RVEC-WVEC-RHEAD-WHEAD-LOCATE
THRE SEG SIC-*(SDEF,SAFMAT,TMAT,MMAT)
V  XQT PROG

      ISIC DATA DECK 'cf REF-Boeing Document)

VFIN
```

Normal Modes (NM) Program

Input Required

(1) Tape A = ISIC catalog tape = A06909 (File generated by ISIC)

(2) Tape C = Symm ISIC tape = A06668 (File generated by ISIC)

(3) Tape D = Asym ISIC tape = A06292 (File generated by ISIC)

(4) NM Data Deck

Program Required

NM program in T0204 tape = Tape Z

Program Correction Required

(1) Insert New SUBROUTINE AGGIE to read as follows:

```
      SUBROUTINE AGGIE
      DIMENSION MT(12)
      REWIND 1
      REWIND 2
100   READ (1) I,J,K,MT
      WRITE (2) I,J,K,MT
      IF(I.GT.-1) GO TO 100
      REWIND 1
      REWIND 2
      STOP
      END
```

REASON: Tape A should contain the original ISIC catalog, while tape B contains the altered catalog at the end of Normal Modes execution.

NOTE: (1) This program should precede all Normal Modes runs.
(2) Tape B from ISIC should be mounted on unit A (not unit B)

(2) Statement number 74 of MONITR: New Insert to read as follows:

```
      IF(ICF.EQ.0)  GO TO 100
```

REASON: Check value of ICF to get out of DO LOOP.

(3) Statement number 26 of CTINIT:
Delete 4 statements and newly insert to read as follows:

```
Delete   COMMON/CTO1/LCAT
         COMMON/CTO2/NFOUT
         COMMON/CTO3/LFOUT(6)
         COMMON/CTO4/NMOUT(6)

Insert   COMMON/CTO1.LCAT,NFOUT,LFOUT(6),NMOUT(6)
```

REASON: Make common statement compatible with the other subroutines

(4) Statement number 46 and 47 of DSN: New Insert to read as follows:

```
      REWIND 7
      REWIND 8
```

REASON: Rewind Tape E and Tape F

Output File Generated

(1)	Tape B = NM catalog tape = A08012		Matrix catalog from ISIC to SDSS
(2)	Tape E = Symm NM tape = A01078		Symmetric Matrices to SDSS program
(3)	Tape F = Asym NM tape = A01344		Anti-symmetric Matrices to SDSS program
(4)	Tape G = Shape NM tape = A08045		Model shape tape to NMPLOT program

File Destinies

(1) Tape B: SDSS
(2) Tape E: MERGE
(3) Tape F: MERGE
(4) Tape G: NMPLOT

Cover Sheet Format

Ref-NM/1

Control Cards

Ref-NM/2

INSTRUCTIONS FOR CENTRAL COMPUTER COMPLEX COMPUTER RUNS

Ref-NM/1

PROGRAMMER	BADGE NO.	BOX NO.	PHONE NO.	DATE	PRIORITY & INITIALS
D. Colunga	1619	C-16	5971	6/30	

DIVISION CODE	PROG. NO.	PROJ. NO.	EST TIME	MAX. TIME	LINES OUTPUT	DECK NO.
EX 24	E169	3696E	40	50	5k	

OPERATING SYSTEM				TYPE OF RUN		LOG NO
1108 FORTRAN V	☐	3200 SCOPE	☐	PROD. ☒	TEST ☐	COMPUTER REQUIREMENTS
1108 FORTRAN IV	☒	3200 SMARTS	☐	OTHER (EXPLAIN BELOW)		1108 ☒ 3200 ☐
1108 OTHER	☐	3200 OTHER	☐			OTHER

INPUT TAPES				OUTPUT TAPES					
RACK	UNIT	REEL NO.	FILE NAME	UNIT	REEL NO.	FILE NAME	C	SAVE	PROCESSING REQUIRED
	A	A06909	A	B	A08012	B		Yes	
	C	A06668	C	E	A01078	E		Yes	
	D	A06292	D	F	A01344	F		Yes	
	Z	T0204	Z	G	A08045	G		Yes	
WORKING TAPES									
				4060 ☐		REEL NO.			NO. FRAMES
				16 MM ☐	35 MM ☐				

ABNORMAL STOPS	TOTAL TAPE DRIVES USED	ACTUAL TIME USAGE
STOP AT LOC. SR	8	STOP
LOOPING LOC. THRU	DUMP INSTRUCTIONS: NO DUMP X	
EXCESS OUTPUT	DUMP ON STOP	START
EXCESS TIME	DUMP ON LOOP	
	OTHER	

PROGRAMMER'S COMMENTS

*Tape Z = T0204 is a special Texas A&M Tape

OPERATOR'S COMMENTS

SYSTEM OPERATOR

```
▽P RUN 01619,EX24,C16,3696E,E169,C,50,5                    D. COLUNGA
▽N MSG FILE REQ  TAPE 8 FH432 2 FSTRN 8
▽  ASG A=A06909
▽S ASG B=A08012
▽  ASG C=A06668
▽  ASG D=A06292
▽S ASG E=A01078
▽S ASG F=A01344
▽S ASG G=A08045
▽  ASG H,I,J,K,L,M,N,P
▽  FOR AGGIE

       AGGIE SOURCE DECK

▽  XQT AGGIE
▽  XQT CUR
   TRW A
   REL A
▽  ASG Z=T0204
▽  XQT CUR
   TRW Z
   IN  Z
   TRW Z
   REL Z
▽  FOR,* MONITR,MONITP
```

```
-73
      IF(ICF.EQ.0) GO TO 100
▽  FOR,* CTINIT,CTINIT
-26,29
      COMMON/CTOL/LCAT,NFOUT,LFOUT(6),NMOUT(6)
▽  FOR,* DSN,DSN
-45
       REWIND 7
       REWIND 8
▽  MAP NMP
   SEG NM-MPAK-*(INCONT,SHAPE,FNMAT,NMOUT)
MPAK SEG VIP-VLIN-RVEC-WVEC-RHEAD-WHEAD-LOCATE
▽  XQT NMP

       NM DATA DECK

▽FIN
```

Stability Derivatives and Static Stability (SDSS) Program

I Generate Absolute SDSS Program

Program Required

Symbolic and relocatable SDSS in PCFC tape (= Tape C)

Output Files Generated

Tape G = A08126 Absolute SDSS tape

File Destinies

Tape G: SDSS

Cover Sheet Format

Ref-SDSS-I/1

Control Cards

Ref-SDSS-I/2

INSTRUCTIONS FOR CENTRAL COMPUTER COMPLEX COMPUTER RUNS

Ref-SDSS-I/1

PROGRAMMER	BADGE NO.	BOX NO.	PHONE NO.	DATE	PRIORITY & INITIALS
D. Colunga	1048	16-C	5971	6/16	

DIVISION CODE	PROG. NO.	PROJ. NO.	EST. TIME	MAX. TIME	LINES OUTPUT	DECK NO.
FD 32	E169	3696E	5	6	2	1

OPERATING SYSTEM				TYPE OF RUN		LOG NO.	
1108 FORTRAN V	☐	3200 SCOPE	☐	PROD. ☐	TEST ☒	COMPUTER REQUIREMENTS	
1108 FORTRAN IV	☒	3200 SMARTS	☐	OTHER (EXPLAIN BELOW)		1108 ☒	3200 ☐
1108 OTHER	☐	3200 OTHER	☐			OTHER	

INPUT TAPES				OUTPUT TAPES					
RACK	UNIT	REEL NO.	FILE NAME	UNIT	REEL NO.	FILE NAME	C	SAVE	PROCESSING REQUIRED
	C	PCFC	C	G	A08126	G		Yes	

WORKING TAPES						
				4060 ☐	REEL NO.	NO. FRAMES
				16 MM ☐ 35 MM ☐		

ABNORMAL STOPS	TOTAL TAPE DRIVES USED	ACTUAL TIME USAGE
STOP AT LOC. SR:	2	STOP
LOOPING: LOC. THRU	DUMP INSTRUCTIONS	
EXCESS OUTPUT	NO DUMP X	
EXCESS TIME	DUMP ON STOP	START
	DUMP ON LOOP	
	OTHER	

PROGRAMMER'S COMMENTS

* PCFC is a special Texas A&M PCF Tape

OPERATOR'S COMMENTS

SYSTEM OPERATOR

```
vP RUN 01048,FD32,C16,3696E,E169,C,6,1                    D. CC:UNGA
vN MSG FILE REQ  TAPE 2  FH432 0  FSTRN 1
vW ASG C=PCFC
v  ASG E
v  ASG G=A08126
v  COM 03477775
v  XQT CUR
   TRW C
   IN  C
   ERS
   IN  C
   TRW C
   TRW E
     TWR E, CARDIN/CODE
     TWR E,DCONRL/CODE
     TWR E,DEXDW/CODE
     TWR E,DPERT/CODE
     TWR E,DSTAB/CODE
     TWR E,DWT/CODE
     TWR E,DGYRO/CODE
     TWR E,FA/CODE
     TWR E,FT/CODE
     TWR E,FTOTAL/CODE
     TWR E,F2F3/CODE
     TWR E,MATPRT/CODE
```

```
      TWR E,SPECS/CODE
      TWR E,TA/CODE
      TWR E,TMDATA/CODE
      TWR E,TMPRT/CODE
      TWR E,TRIM/CODE
      TWR E,TRIMCC/CODE
      TWR E,TRIMIT/CODE
      TWR E,TS/CODE
      TWR E,WTDATA/CODE
      TWR E,WTDER/CODE
      TWR E,CSAB/CODE
      TWR E,CINVER/CODE
      TWR E,VIPA/CODE
      TWR E,DATE/CODE
      TWR E,INTURP/CODE
      TWR E,DATA/CODE
   TEF E
   ERS
   TRW E
   IN  E
   TRW E
V  MAP CARDAL,CARDAL
   SEG CARDIN-DPERT-DWT-DSTAB-DCONRL-DGYRO-DTRST-MATPRT-;
       SPECS-INTURP-DATA-DATE-DEXDW
   DEF CARDIN
```

```
V  MAP TRIA,TRIA
   SEG TRIM-TRIMIT-FTOTAL-TMPRT-CINVER-CSAB-WTDER-F2F3-;
       WTDATA-TRIMCC-FT-FA-VIPA-FS-TA-TS-TMDATA
   DEF TRIM
V  XQT CUR
   TOC
   TRW C
   TRW E
   OUT E
   TEF E
   TRW E
   ERS
   IN  C
   ERS
   IN  C
   TRI C
   IN  E
   TRI E
V  MAP SDSSPE,SDSSPE
   SEG SDSS-MPAK-*(ONE,ENGINE,TRANS,DUAL,BASIC,SIX,POST)
MPAK SEG RHEAD-WHEAD-RVEC-WVEC-VLIN-VIP
ONE  SEG PREPAR-*(CARDIN,TAPEIN)
SIX  SEG STACON-*(DONE,TRIM,SHAPE,INTDW,SDSP,PERT1,P2,PERT3,PERT4)
P2   SEG PERT2-*(RDULSC-VAICA-UAICS-UDATA-UCTRAN,UPRES)
V  ABS SDSSPE,SDSSDE
```

```
∇  XQT CUR
   TOC
   TRW G
   OUT G,2
   TEF G
   TRI G
∇  EOF
∇FIN
```

Stability Derivatives and Static Stability (SDSS) Program

II SDSS Run

Input Required

(1) Tape A = GD tape = A05090 (File generated by GD)
(2) Tape B = SAIC tape = A01827 (File generated by SAIC)
(3) Tape C = Catalog tape = A08118 (File generated by ISIC)
(4) Tape D = Symm ISIC tape = A14061 (File generated by ISIC)
(5) Tape E = Asym ISIC tape = A12922 (File generated by ISIC)
(6) SDSS Data Deck

Program Required

Tape Z = ABS SDSS tape = A08126 (File generated by SDSS-I)

Program Correction Required

None

Output File Generated

(1) Tape F = SDSS tape
(2) Punched card output

{ Loads matrices for SLOADS
Data for CER and TH

File Destinies

Tape F: SLOADS
CER
TH

Cover Sheet Format

Ref SDSS-II/1

Control Cards

Ref SDSS-II/2

INSTRUCTIONS FOR CENTRAL COMPUTER COMPLEX COMPUTER RUNS

Ref-SDSS-II/1

PROGRAMMER	BADGE NO.	BOX NO.	PHONE NO.	DATE	PRIORITY & INITIALS
J. Colunga	1619	C-16	5971	6/23	

DIVISION CODE	PROG NO.	PROJ. NO.	EST. TIME	MAX. TIME	LINES OUTPUT	DECK NO.
EX 24	E169	3696E	10	15	5k	

OPERATING SYSTEM		TYPE OF RUN		LOG NO.
1108 FORTRAN V ☐	3200 SCOPE ☐	PROD ☐	TEST ☐	COMPUTER REQUIREMENTS
1108 FORTRAN IV ☒	3200 SMARTS ☐	OTHER (EXPLAIN BELOW)		1108 ☐ 3200 ☐
1108 OTHER ☐	3200 OTHER ☐			OTHER

INPUT TAPES				OUTPUT TAPES					
RACK	UNIT	REEL NO.	FILE NAME	UNIT	REEL NO.	FILE NAME	C	SAVE	PROCESSING REQUIRED
	A	A05090	A	F		F		Yes	
	B	A01827	B						
	C	A08118	C						
	D	A140061	D						
	E	A12922	E						
	Z	A08126	Z						
		WORKING TAPES							

				4060 ☐	REEL NO.	NO. FRAMES
				16 MM ☐ 35 MM ☐		

ABNORMAL STOPS	TOTAL TAPE DRIVES USED	ACTUAL TIME USAGE
STOP AT LOC. SR	7	STOP
LOOPING LOC. THRU	DUMP INSTRUCTIONS	
EXCESS OUTPUT	NO DUMP X	START
EXCESS TIME	DUMP ON STOP	
	DUMP ON LOOP	
	OTHER	

PROGRAMMER'S COMMENTS

OPERATOR'S COMMENTS

SYSTEM OPERATOR

```
VP RUN 01048,FD32,C16,3696E,E169,C,15,5                    D. COLUNGA
VN MSG FILE REQ  TAPE 7  FH432 2  FSTRN 16
VN MSG PUNCHED CARD OUTPUT
V  ASG A=A05090
V  ASG B=A01827
V  ASG C=A08118
V  ASG D=A14061
V  ASG E=A12922
V  ASG F=F
V  ASG Z=A08126
V  ASG I,J,K,L,N,O,P,Q,R,S,T,U,V,W,X,Y
V  XQT CUR
   TRW Z
   IN  Z
   REL Z
V  XQT SPSSDE

       SDSS DATA DECK

VFIN
```

Program To Fix Up SDSS

```
V RUN
VN MSG  TAPE  2   FH432  0  FSTRN 2
V ASG  A= Current SDSS PCF Tape
V ASG  B=B
V ASG  C,D
V COM  03477775
V XQT  CUR
  TRW  A
  FIND  A,SPECS/SYMBOLIC
  TRD  A
V FOR, *SPECS, SPECS
-211
      REWIND NT17
V XQT  CUR
  TRW  C
  OUT  C,1          SYMBOLIC
  TEF  C
  TRW  D
  OUT  D,3          RELOCATABLE
  TEF  D
  ERS
  TRW  A
  TRW  C
  IN   A
  IN   C
  TRW  B
  OUT  B            UPDATED SYMBOLIC FILE
  TEF  B
  ERS
  IN   A
  TRW  D
  IN   D
  OUT  B            RELOCATABLE FILE UPDATED
  TEF  B
```

```
  TRW  A
  TRW  B
  REL  A
  ERS
  IN   B
  LIST SPECS
  TRW  B
  REL  B
V FIN
```

Geometry Definition Plot Program (GDPLOT)

Input Required

(1) GD Tape = ZZ0424 (Generated by GD)

(2) GDPLOT Data Deck

Program Required

GDPLOT program (source) Deck consist of

(1) GDPL

(2) PGD

(3) LOCATE and

(4) Subprogram of the CALCOMP and GERBER basic software namely PLOT, LINE, AXIS, NUMBER, SCALE, SYMBOL, STOPP, etc.

(5) Subprogram in S/360 Library such as DATE

Program Change Required

Subroutine STOPP (equivalent to LINE4 of CALCOMP package) should be added to the last plot program.

Output Generated

(1) GERBER Tape (Used as the input data for GERBER plotter: 7track)

(2) GERBER plotted sheet

(3) "Geometric Data from Geometry Definition File" (printed sheet)

Job Control Cards

Ref-GDPL-1

OS/360 Job Ticket

Ref-GDPL-2

GERBER Job Ticket

Ref-GDPL-3

Work Statistics

(1) IBM S/360 Card in 910

Card out 0

Lines 1932 line
Time 1.12 min.
Cost $8.52

(2) GERBER 622 Time about 40 min.

Ref-GDPL-1

```
//DQ835    JOB (909T4,3-C--,002,003,DC)," D. COLUNGA  SPACE SHUTTLE  "
/*CLASS        F           230k - 320k                 TAPE SETUP
/*SETUP
//  EXEC GERBER,PARM.FORT=BCD,REGION=320k
//FORT.SYSIN DD *

        GDPLOT SOURCE DECK

//GO.FT01F001 DD UNIT=TAPE9,
//    VOL=SER=ZZ0424,
//    DISP=(OLD,PASS),
//    LABEL=(1,NL),
//    DCB=(RECFM=VSB,LRECL=7196,BLKSIZE=7200)
//GO.SYSIN DD *

        GDPL DATA DECK
/*
```

Paper Pat'd. By N.C.R. Co.
Speediset @ Moore Business Forms, Inc., Bryan Area - N 0661002043

Ref. GDPL-2

JOB#

OS/360 JOB TICKET

Date

Job Name	DPSR #	User Name	Return To	Run Time	Lines	Cards
// DQ835	909T4	D. Colunga	3-C	002	003	0

User Comments

Class	F	Requested Priority		Assigned	

STEP NAME	DD NAME	DATA SET NAME	VOLUME Serial #	VOLUME Type	Action Code	File Protect Ring	LIBRARY CONTROL When Pulled	LIBRARY CONTROL When Filed	SLOT NO.
GO	FT20F001	APTAPE	zz0455	Tape 7	~~Input~~ Output	~~Out~~ In			
	FT01F001		zz0424	Tape 9	Input ~~Output~~	Out ~~In~~			
				Tape	Input Output	Out In			
				Tape	Input Output	Out In			
				Tape	Input Output	Out In			
				Tape	Input Output	Out In			
				Tape	Input Output	Out In			
				Tape	Input Output	Out In			
				Tape	Input Output	Out In			

Operator Comments

Program terminated normally ☐Yes ☐No Time turned in

If No specify system ABEND Code I/O Error on

Stop Q ☐Yes ☐No JCL Error ☐Yes ☐No Time Executed

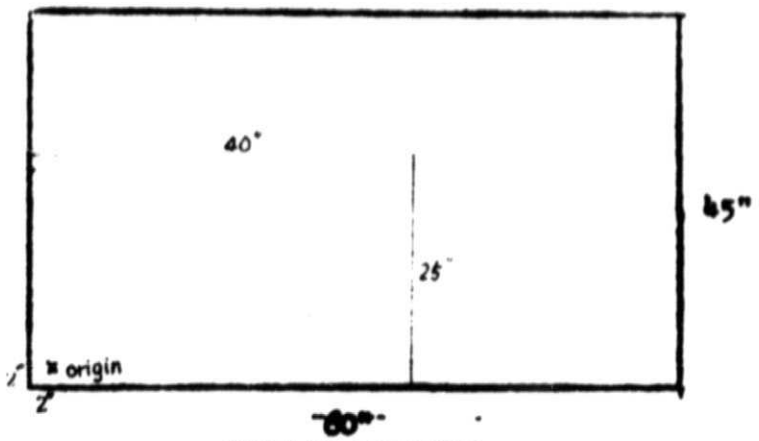
specify reason.

GERBER 622 JOB TICKET

USER NAME D. Colunga DATE _____ CAMPUS PHONE _____

ACCOUNT NUMBER _____ TAPE NUMBER ZZ0455 SIGNATURE _____

On the plotter area below, roughly sketch your expected results. Clearly show the starting point for the plot, and note the total width and height of your drawing.



NOTE TO OPERATOR

NUMBER OF FILES ON TAPE 1 NUMBER OF PLOTS PER FILE 1

SCALE AT WHICH PLOT IS TO BE DRAWN: .5 XX 2 3 4 5 6 7 8 9 10 16

PEN NO. _____ TYPE B,P COLOR Black

_____ _____ _____

_____ _____ _____

TYPE OF PAPER: BOND VELLUM OTHER

COMMENTS: _____

DO NOT WRITE BELOW THIS LINE

DATE PLOTTED _____ TIME OF DAY _____ PLOT TIME _____

STARTING TIME _____ FINISH TIME _____

REPLOT FILE _____ STOP _____

RESTART FILE _____ STOP _____

Program Correction For GDPL

1. Problem

GDPL was originally programmed for plotting data using the CALCOMP. This program could be used for the GERBER plotter except that in the GERBER the last line was not produced.

2. Program Change Suggestion

On the GERBER CALL STOPP gives the required final line.
Therefore in GDPL

ORIGINAL PROGRAM

```
CARD #
0061   60  READ (NTGD) (STOR(I),I=1,10),XO,YO,ZO,THETR,STOR(11)
                          (Comment:  READ NEW DATA from GD tape)
0062       IF(STOR(1).EQ.0) GO TO 400
                          (Comment:  Check if DATA is completed)
                    '
                    '
                    '
                    '
                    '
0352   400 PGNU=PGNU+15.
0353       CALL PLOT (PGNU,-YPAGE,-3)  (To reset origin for next file)
0354       CALL PGD (NTGD,KFILGD)      (To print GDTAPE)
```

Correction

```
Insert     CALL STOPP   between 0353 and 0354
```

3. Document

There are no documents containing GERBER instructions. However, subroutine "STOPP" is equivalent to subroutine "LINE4" of CALCOMP basic package.

Subroutine LINE4 (from LOCAL OS/360 Library Subroutines pp 30.0)

LINE4 - is used to purge the buffer to insure that the last plot of a job is complete. An end file mark is placed on the plot tape. LINE4 should be the last plotting routine called and should only be called once.

CALL LINE4 No arguments are used.